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Leica IsoPro™ Automated Cross-stage

User manual

Leica
MICROSYSTEMS

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Dear User,

Thank you for your faith in our product. We hope your work with Leica Microsystems' high-quality, high-performance products is both enjoyable and successful.

In developing our instruments, we place great value on simple, self-explanatory operation. However, please take the time to read the user manual to become familiar with your stereomicroscope's advantages and features so that you can use them optimally. Should you have any questions, please consult your local Leica representative. You will find the address of the closest local representative as well as valuable information about products and services from Leica Microsystems on our homepage at www.leica-microsystems.com
We are gladly at your service. Customer service is a big thing with us – before and after the sale.

The user manual

You can find the user manual in 20 other languages on the interactive CD-ROM.
User manuals and updates are also available for you to download from our web site at
www.leica-microsystems.com/stereomicroscopes.

This user manual describes the safety instructions, assembly and handling of the Leica IsoPro™ motorized cross-stage (10 447 305) and the Leica PSC controller (10 447 444).

Safety concept

1.1 The user manual

The Leica IsoPro™ motorized cross-stage includes an interactive CD-ROM with all relevant user manuals in 20 other languages. Keep it in a safe place, and readily accessible to the user. User manuals and updates are also available for you to download and print from our web site at www.leica-microsystems.com.

The Leica IsoPro™ motorized cross-stage is a module of the Leica M stereomicroscope series. This user manual describes the special functions of the cross-stage and contains important instructions for its operational reliability, maintenance, and accessories.

The user manual M2-105-0 for Leica M stereomicroscopes contains additional safety information regarding the stereomicroscope, accessories and electrical accessories as well as instructions for care.

You can combine the Leica IsoPro™ with the Leica incident light base (10 447 342) and the TL BFDF, TL RC™ and TL RCI™ transmitted light bases. For additional information on these bases, please read the respective user manuals provided on the interactive CD-ROM.

Read the cited user manuals prior to assembly, startup and use. In particular, please observe all safety instructions.

To maintain the unit in its original condition and to ensure safe operation, the user must follow the instructions and warnings contained in these user manuals.

1.1.1 Symbols used

Warning of a danger

This symbol indicates especially important information that, if not observed,
– can cause hazards to personnel,
– can lead to functional disturbances and damaged instruments.

Warning of hazardous electrical voltage

This symbol indicates especially important information that, if not observed,
– can cause hazards to personnel,
– can lead to functional disturbances and damaged instruments.

Danger due to hot surface

This symbol warns against touching hot surfaces, e.g. those of light bulbs.

Important information

This symbol indicates additional information or explanations that intend to provide clarity.

Action

▶ This symbol refers to actions described in the text that are to be carried out.

Explanatory notes

• This symbol indicates additional notes and explanations provided in the text.

Diagrams

(1.5) Numbers in parentheses within the descriptions pertain to diagrams and the items in the diagrams. Example (1.2): Figure 1 is located on page 8, for example, and item 2 is the housing of the cross-stage motor.

1.2 Safety instructions

Description

The Leica IsoPro™ motorized cross-stage fulfills the highest requirements for observation and documentation with Leica M and S series stereomicroscopes. It includes a cross-stage with precision motorization, the X-Y Stage DCI Module for connecting to other instruments and the Leica PSC controller. The complete stand consists of the following:

- TL RC™ or TL RCI™ transmitted light base
- 300mm or 500mm long stand column with focusing drive, manual coarse/fine, or motorized focus
- Glass insert, clear, 220×170×4mm
- Your choice of light source and light guide

Accessories:

- Gliding stage
- Leica MATS thermocontrol system with thermal stage
- Polarization device

  etc. (see assembly diagram)

Permitted uses

The Leica IsoPro™ motorized cross-stage is for assembly of Leica M series stereomicroscopes. It is combined with your choice of either a transmitted or incident light base (except TL ST). Its purpose is to drive to specimens with high precision and thus to automate recurring processes with the help of the Leica LAS software.

• Before assembly and startup, be absolutely certain to ensure that the base is stable and resting on a level support!
• Never move the sledge of the motorized cross-stage manually in the X direction, as otherwise the mechanical system will be damaged!

Non-intended use

If the Leica IsoPro™ motorized cross-stage, its components or accessories are used other than as described in the user manual, injury or property damage may occur.
Never:

- change, rebuild or take apart parts, if not specifically instructed to in this manual.
- allow unauthorized persons to open parts.
- use the Leica IsoPro™ motorized cross-stage for examinations and operations involving the human eye.

The devices and accessories described in this operating manual have been tested for safety and potential hazards. The responsible Leica affiliate or the main plant in Wetzlar, Germany must be consulted whenever the instrument is altered, modified or used in conjunction with non-Leica components that are outside of the scope of this manual.
Unauthorized alterations to the instrument or non-compliant use shall void all rights to any warranty claims!

Place of use

- The Leica IsoPro™ motorized cross-stage may only be used in closed, dust-free rooms at +10° C to +40° C. Ensure that the room is free of oil and chemical fumes and extreme humidity.
- Electrical components must be assembled at least 10cm away from the wall and from flammable substances.
- Avoid large temperature fluctuations, direct sunlight and vibrations. These conditions can distort measurements and micrographic images.
- In warm and warm-damp climatic zones, the Leica IsoPro™ motorized cross-stage requires special care in order to prevent fungus.

Responsibilities of the person(s) in charge of instrument

Ensure that
- the Leica IsoPro™ motorized cross-stage and accessories are operated, maintained and repaired by authorized and trained personnel only.
- the operating personnel have read and understood this user manual, particularly all safety regulations, and observe them.

Repairs and servicing

- Only Leica Microsystems-trained service technicians, or technical specialists assigned by the person in charge of the instrument, are permitted to carry out repairs.
- Only original Leica Microsystems spare parts may be used.
- Before opening the instruments, switch off the power and unplug the power cable.

Touching the live circuit can cause injury.

Transport

- Use the original packaging for shipping or transporting the Leica IsoPro™ motorized cross-stage and its accessory components.
- In order to prevent damage from vibrations, you can disassemble all moving parts that (according to the user manual) can be assembled and disassembled by the customer and pack them separately.
- Attach transport anchors.

Integration in third-party products

When installing Leica products into third-party products, note the following: The manufacturer of the complete system or its dealer is responsible for following all applicable safety instructions, laws and guidelines.

Disposal

The products described here are to be disposed of in accordance with the applicable local laws and regulations.

Legal requirements

Adhere to general and local regulations relating to accident prevention and environmental protection.

EC Declaration of Conformity

The Leica IsoPro™ motorized cross-stage and its accessories are constructed based on the state of the art of technology and are provided with an EC Declaration of Conformity.

Operating elements

Fig. 1

1 Leica IsoPro™ motorized cross-stage
2 Housing with motorization

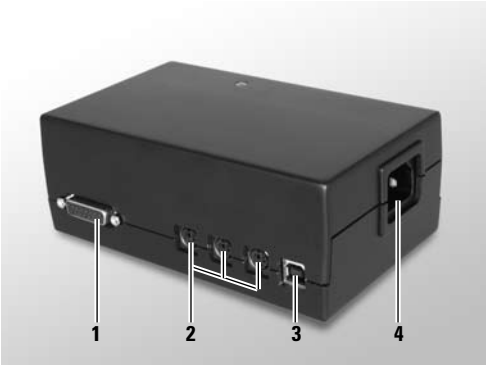


Fig. 2 X-Y Stage Control Module

1 Sub-D interface for Leica SmartMove™
2 3 CTL2 interfaces
3 USB interface (type B)
4 Socket for grounded power cable

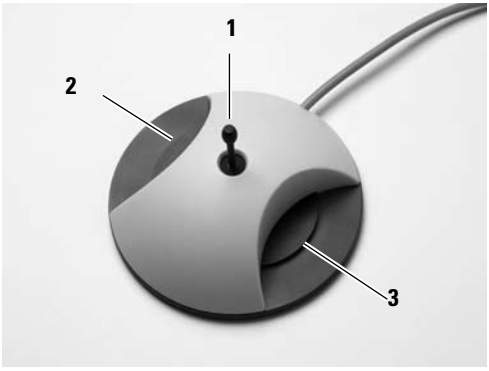


Fig. 3 Leica PSC controller

1 Joystick: quick control/memory function
2 Left wheel: fine control in X direction
3 Right wheel: fine control in Y direction

Even while unpacking the microscope, ensure that no one can be injured by parts falling down or falling over.

3.1 Removing the transport restraints

The transmitted light bases of the TL series (TL BFDF, TL RC™, TL RCI™) are delivered with an installed extension plate. The selected stage (IsoPro™ cross-stage or standard stage 10 447 269) and focusing drive must be installed later. Ensure that all instruments are unpacked on a level, adequately sized and nonskid underlay.

The motorized cross stage is a sensitive precision instrument. Please take care to avoid impacts and heavy vibration of the table during assembly.

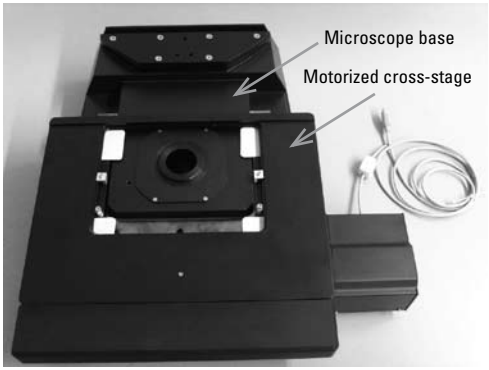


Fig. 4 Remove the cross-stage from the transport packing and place it on the transmitted-light base.

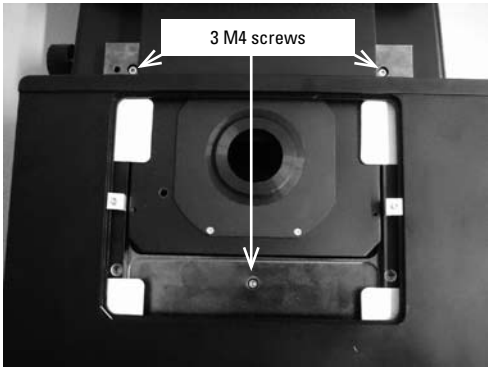


Fig. 5 Securely fix the motorized cross-stage to the base using 3 M4 screws.

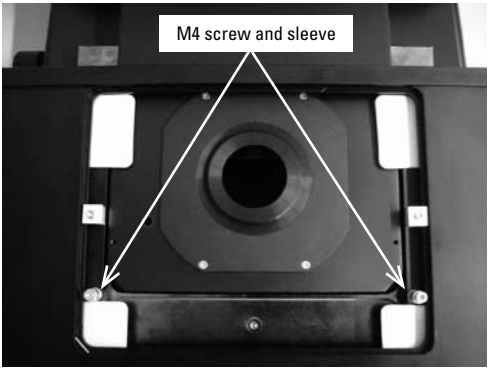


Fig. 6 Remove 2 sets of M4 screws and sleeves from the cross-stage.

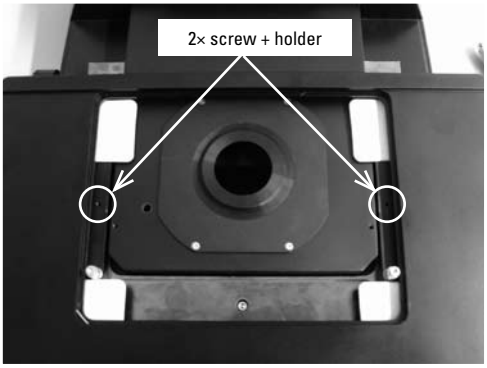


Fig. 7 Remove 2 sets of M3 screws and holder from the cross-stage.

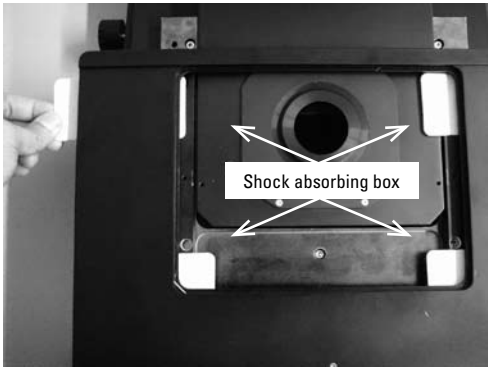


Fig. 8 Remove the 4 shock absorbing boxes from the cross-stage.

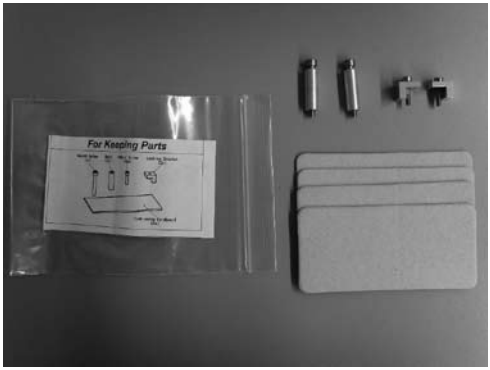


Fig. 9 Save all removed transport restraints for future transportation in the supplied plastic bag.

3.2 Assembly

The TL BFDF, TL RC™ and RCI™ transmitted light bases can be equipped with three different stages: standard stage, manual and IsoPro™ automated cross-stage. The selected stage is mounted on the base before startup. You can switch between the stages at any time with just a few simple movements.

The following section pertains to the base without the mounted stage. Removal follows the following steps in reverse sequence.

Cross-stage ▶ Base

• Before assembly and startup, be absolutely certain to ensure that the base is stable and resting on a level support!
• Never move the sledge of the motorized cross-stage manually in the X direction, as otherwise the mechanical system will be damaged!

▶ Place the cross-stage on the base (5).
▶ Carefully move the upper part of the cross-stage in the direction of the user while fastening the lower part to the transmitted light base.
▶ Tighten the cross-stage by screwing uniformly at the three tapped holes.
▶ Now move the cross-stage as far as it will go in the direction of the column.
▶ Insert the glass plate into the cross-stage.

Cross-stage ▶ X-Y STAGE CONTROL MODULE

▶ Plug the CTL2 plug of the cross-stage motor into one of the three available CTL2 interfaces (2.2).
▶ Plug the CTL2 plug of the Leica PSC controller into another CTL2 interface.
• The third CTL2 interface is available for connecting other instruments, such as the Leica foot switch (10 447 398) or TL RCI™ transmitted light base (10 446 352).
▶ The 15-pin Sub-D interface is intended for use with the Leica SmartMove™ Controller (11 501 197).
▶ Plug a power cable (according to IEC60227 or IEC60245 standard) into the socket (4) provided and into a grounded power socket.
• As soon as all instruments have been plugged into the control box and it has been plugged into the power supply, the cross-stage initializes and automatically drives to the mid position.
▶ Connect the PC and X-Y Stage DCI Module where applicable using a suitable USB cable.

4.1 Operation with the Leica PSC controller

The Leica PSC controller (3) gives you precision control of the Leica IsoPro™ motorized cross-stage.

Passing over the specimen quickly

- ▶ Move the joystick (3.1) in the X or Y direction.
- ▶ Move the joystick diagonally to simultaneously move the cross-stage in the X and Y directions.

Fine control of the cross-stage

The motorized Leica IsoPro™ cross-stage offers an accuracy of up to 0.25µm. To move to a position with high accuracy, use the left and right knobs on the joystick (3.2 / 3.3).

- ▶ For fine control in the X direction, use the left knob (3.2).
- ▶ For fine control in the Y direction, use the right knob (3.2).

Control using the Leica LAS software

All instructions for controlling the Leica IsoPro™ cross-stage using the Leica LAS software are provided in the software's help file.

Care, maintenance

In this chapter

We encourage you to handle your valuable instrument carefully and provide some tips for care and cleaning.

We guarantee quality

You are working with a precision instrument with great capabilities.

Accordingly, we guarantee the quality of our instruments. The warranty covers manufacturing and material defects, but not damage caused by negligence or improper use.

Please handle your instrument with due care. Then, it will maintain the same high level of accuracy over decades of service. This is the quality for which our instruments are known.

However, if your instrument should no longer function properly, contact your technician, your Leica representative or Leica Microsystems (Switzerland) Ltd., CH-9435 Heerbrugg.

Protect your instruments

- From moisture, vapors, acids, alkaline and corrosive substances. Do not store chemicals near the instruments.

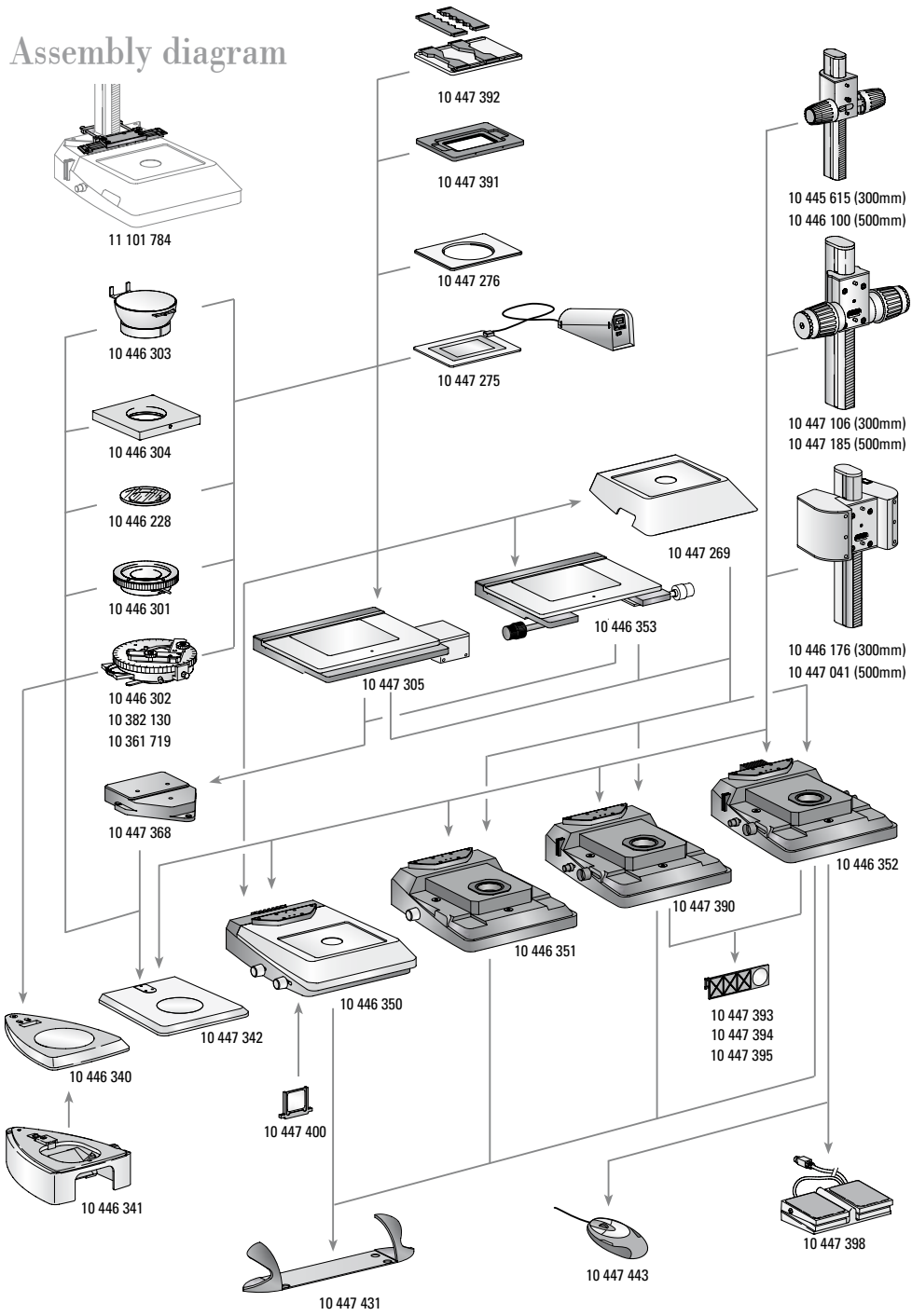
- From improper use.
  Never install any other socket or unscrew the optical systems or mechanical parts unless expressly instructed to do so in the instructions.

- From oil and grease.
  Never oil or grease mechanical parts or sliding surfaces.

Technical data

Compatibility	Leica incident light base and TL bases (TL BFDF, TL RC™, TL RCI™)
Table size (L × W × H)	335.5 mm × 370 mm × 41.5 mm
Travel path	152 mm × 102 mm (6" × 4")
Speed X,Y	30 mm/s
Motor resolution X,Y	0.25 µm
Repeatability X, Y	± 2 µm
Positioning accuracy X,Y	± 20 µm over the entire travel path
Hysteresis X, Y	30 µm
Motor	DC motor with encoder
Backlash	Free of backlash
Adaptor	All TL base adaptors
Acceleration	S-shaped acceleration curve
Computer connection	USB
Monitoring functions	Leica PSC™, Leica Smart Move, Leica LAS via PC
Power supply	Input: 100–240 VAC 50/60 Hz 1.0 A Output: 15 VDC 2.66 A 40W MAX

Assembly diagram



Standard delivery

Incident light bases

10 446 340	Incident light base for S series
10 446 341	Sub-base for transmitted light for S series incident light base
10 447 342	Incident light base for M series
10 446 350	TL ST transmitted light base
10 446 351	TL BFDF transmitted light base
10 447 390	TL RC™ transmitted-light base for external cold light sources
10 446 352	TL RCI™ transmitted-light base with integral halogen light

Stages

10 447 269	Standard stage for TL BFDF, TL RC™ and TL RCI™ transmitted light bases
10 446 353	Manual cross-stage for TL BFDF, TL RC™, TL RCI™ transmitted light bases and incident light base (with adaptor 10 447 368)
10 447 305	Automate cross-stage for TL BFDF, TL RC™, TL RCI™ transmitted light bases and incident light base (with adaptor 10 447 368)
10 447 368	Adaptor between cross-stage and incident light base 10 447 342
10 447 275	Leica MATS TL thermocontrol stage with control unit
10 447 276	Adaptor for stages with ∅120mm
10 447 391	Stage for LifeOnStage accessories
10 447 392	Universal carrier for petri dishes, lens carrier (up to 4) etc.
11 101 784	Column adapter for micromanipulation
10 446 301	Gliding stage, ∅120mm
10 446 302	Polarization stage, ∅120mm
10 382 130	Attachable mechanical stage for polarization stage
10 361 719	Sensitive-tint plate for rotable polarization stage
10 446 303	Cup stage, ∅120mm
10 446 304	Universal carrier, ∅120mm
10 446 228	Glass stage plate with Pol, ∅120mm

Focusing drives

10 445 615	Focusing drive with 300mm side-faced column for incident and transmitted light bases
10 446 100	Focusing drive with 500mm side-faced column for incident and transmitted light bases
10 447 106	Focusing drive, coarse/fine, with 300mm side-faced column for incident and transmitted light bases
10 447 185	Focusing drive, coarse/fine, with 500mm side-faced column for incident and transmitted light bases
10 446 176	Motorized focus drive with 300mm column and power supply for incident and transmitted light bases
10 447 041	Motorized focus drive with 500mm column and power supply for incident and transmitted light bases

Filters

10 447 400	Daylight filter for TL ST base
10 447 394	BG38 fluorescence filter for TL RC™/ RCI™ transmitted light base
10 447 395	UV filter for TL RC™/ RCI™ base
10 447 393	ND filter (gray filter) for TL RC™/ RCI™ base

Illumination

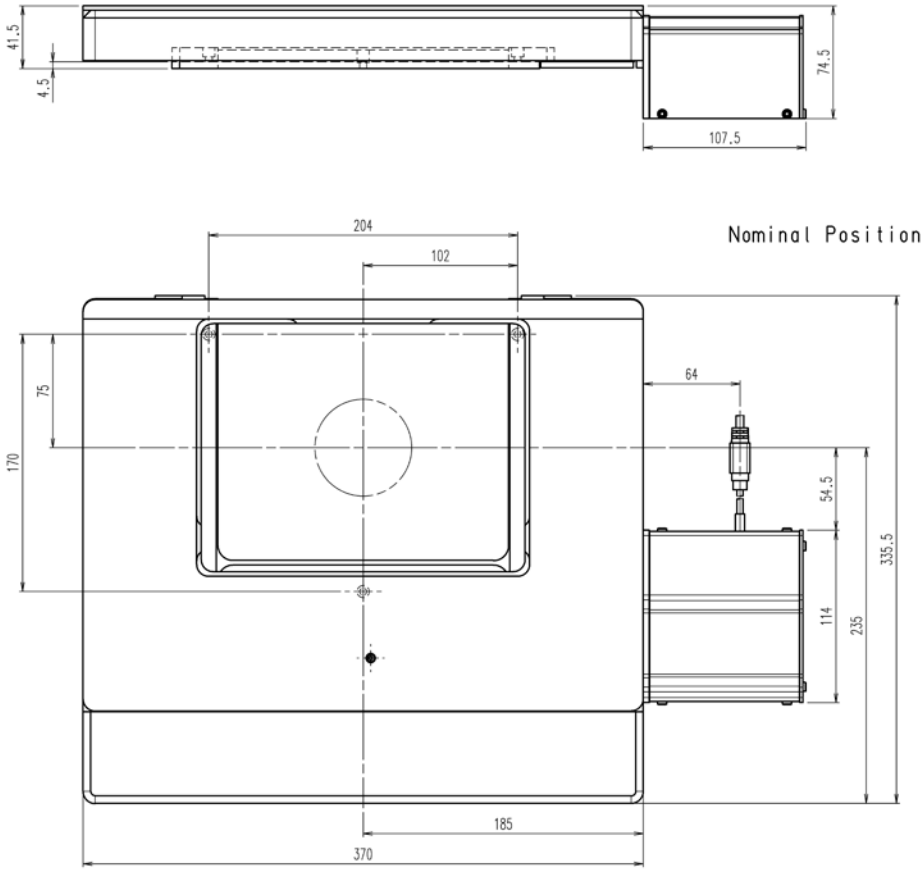
10 447 444	Leica PSC (Precision Stage Controller) for controlling the Leica IsoPro™ motorized cross-stage
10 447 443	Leica USB mouse, user-assignable five-button mouse for connecting to the TL RCI™ transmitted light base or PC
10 443 401	USB cable for connecting the TL RCI™ base to the PC
10 447 398	Footswitch with CTL2 bus connection

Ergonomic accessories

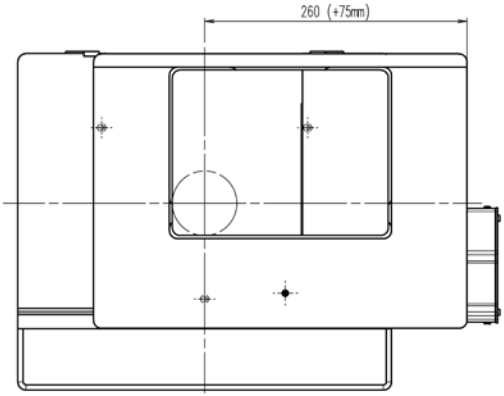
10 447 431	Leica ErgoRest (handrest for fatigue-free working)

Dimensions of Leica IsoPro™ motorized cross-stage

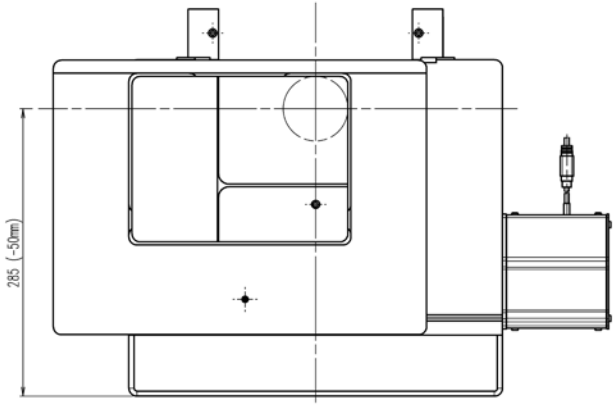
Dimensions in mm



X Travel = 150 mm



Y Travel = 100 mm



Leica Microsystems – the brand for outstanding products

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

Leica Microsystems – an international company with a strong network of customer services

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and representatives of Leica Microsystems in more than 100 countries.

In accordance with the ISO 9001 certificate, Leica Microsystems (Switzerland) Ltd, Business Unit Stereo & Macroscope Systems has at its disposal a management system that meets the requirements of the international standard for quality management. In addition, production meets the requirements of the international standard ISO 14001 for environmental management.

The companies of the Leica Microsystems Group operate internationally in three business segments, where we rank with the market leaders.

• Microscopy Systems

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

• Specimen Preparation

We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslippers.

• Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

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Leica MICROSYSTEMS

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